

REMARKS

The present claims relate to a compound semiconductor epitaxial substrate.

Amendment summary

Upon entry of this Amendment, Claims 1 and 3-9 will be pending.

Claim 1 has been amended to incorporate the subject matter of Claim 2, which has been canceled.

Independent Claim 9 is added, which recites the subject matter of original Claim 4, as it depended from the original version of Claim 1. Support for this amendment is found on, e.g., page 11, lines 10-15 of the specification.

Claims 3-6 have been amended to fix their dependencies.

No new matter is added by this Amendment, and Applicants respectfully submit that entry of this Amendment is proper.

Status of the claims

Claims 1-8 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Saito et al. (U.S. Patent No. 5,762,706) in view of Kudo et al. (U.S. Patent No. 5,495,115) (hereinafter “Saito” and “Kudo,” respectively).

Response to rejection of Claims 1-8 under 35 U.S.C. § 103(a) based on the combined teachings of Saito and Kudo

Applicants initially note that Claim 2 has been canceled, and accordingly respectfully request the withdrawal of the rejection of Claim 2.

Independent Claim 1 recites a compound semiconductor epitaxial substrate for use in a pseudomorphic high electron mobility field effect transistor comprising an InGaAs layer as a channel layer, an InGaP layer containing n-type impurities as a front side electron supplying layer, and an InGaP layer as a front side spacer layer between said channel layer and said front side electron supplying layer. The InGaAs layer has an electron mobility at room temperature (300 K) of $8000 \text{ cm}^2/\text{V}\cdot\text{s}$ or more.

Independent Claim 9 recites a compound semiconductor epitaxial substrate for use in a pseudomorphic high electron mobility field effect transistor comprising an InGaAs layer as a channel layer and an InGaP layer containing n-type impurities as a front side electron supplying layer. The InGaAs layer has an electron mobility at room temperature (300K) of $8000 \text{ cm}^2/\text{V}\cdot\text{s}$ or more and has an In composition of 0.25 or more.

Saito discloses a compound semiconductor device, such as a high electron mobility field effect transistor comprising an InGaAs layer and an n-InGaP layer. However, as observed within the Office Action, Saito does not teach the presently-claimed InGaP layer between the InGaAs layer and the n-InGaP layer.

Kudo is cited for its alleged teachings of an InGaP layer that would remedy the deficiencies of Saito. Applicants note that Kudo discloses that an InAlGaAs layer is inserted between an InGaAs quantum well layer and a GaAs barrier layer (column 4, lines 31-45) and nowhere discloses or teaches by itself the layers of the present claims.

Applicants respectfully submit that Kudo does not disclose or teach that which is asserted within the Office Action. Specifically, the Office Action refers to Figure 9, elements 52 and 57 as support for the position that Kudo discloses the presently claimed layer of InGaP between the InGaAs layer and the n-InGaP layer. However, references 52 and 57 do not fall between the channel layer and the front side electron layer in Kudo. Hence, Kudo does not disclose or teach the elements missing from Saito.

Accordingly, Applicants respectfully submit that the combined teachings of Saito and Kudo do not disclose or teach all elements of the present claims, and therefore this combination of references does not anticipate or render obvious the present claims. Applicants respectfully request reconsideration and withdrawal of this § 103 rejection.

With respect to Independent Claim 9, which corresponds to subject matter previously claimed in original Claim 4, as it depended from original Claim 1, Applicants respectfully submit that the combined teachings of Saito and Kudo do not anticipate or render this claim obvious.

Specifically, Applicants respectfully submit that Saito does not disclose the presently claimed In composition of the InGaAs layer (0.25 or more). Although the Office Action refers to Figure 7a, element 103 as allegedly showing such a feature, Applicants respectfully submit that there is no definition of the In composition of that layer within Saito. Hence, Applicants

respectfully submit that this element of the present claims is not present in the cited art.

Applicants respectfully submit that Independent Claim 9 and Claim 4 are therefore not anticipated or rendered obvious by the cited prior art.

In view of the above, Applicants respectfully request reconsideration and withdrawal of this rejection under 35 U.S.C. § 103.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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